CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

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Southwestern Region

CA, AZ, NV, NM, UT

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ClipperCreek, Inc.

CHARGING AHEAD . . .

In EV industry since 1993

- Founders: Jason France, Mike Rogers, and Dave Packard
- 9,000 EVSE's shipped in the US, Europe and Asia
- Developed 14 generations of EVSEs
- 3,000 Shipped since January 2009
- Products field tested for over 12 yrs.

GET READY . . . HERE THEY COME !

TESLA Roadster

Nissan Leaf 2010

Chevy Volt 2010

Ford Transit Connect 2011

Ford Focus 2012

Toyota Prius 2012

Toyota RAV4 EV 2012

PHEV Utility Truck

Navistar E-Star

ClipperCreek, Inc.
Innovative Infrastructure for Electric and Hybrid Vehicles

EVSE . . .

"Electric Vehicle Supply Equipment"

Power supply for an EV is <u>primarily</u> a ***Safety*** Device

Includes:

- Safety electronics (GFI)
- Vehicle Power Cord
- SAE J1772 – Compliant Connector
- SAE Communications Interlock

EVSE Product Specifications

SAE – Vehicle Specifications

OEM – Charger Specs.

UL – Safety Requirements

NEC – National & Local Building Codes

“SAE-J1772”

- Developed to standardize charging protocol for all electric vehicles
- Interchangeable Connectors & Inlets
- EVSE-to-vehicle communications set maximum charge current – “Control Pilot” Signal
- Compatible with public infrastructure – standard voltages

✓Level 1 = Cord sets 120 V/13 A
✓Level 2 = 208-240V ≤ 80 Amps
✓Level 3 = DC “Fast Charging”

OEM Specifications

- Charge Voltage 120/208/240 VAC
- Charge rate based on vehicle's battery charger
  - EVSE at 16 to 30 amps continuous
  - Now 3.3 kW and 6.6 kW (PHEV & BEV)
- Charge time = battery pack size
  - 8 to 60 kWhr for passenger cars and PHEV Trucks
  - 80 – 100 kWhr for EV trucks
- Inlet location - Varies
- Vehicle Interlock – Safety
- Vehicle Charge status & vehicle charge management through Vehicle Telematics

UL Listing

- UL 2202

  Standard for Electric Vehicle (EV) Charging System Equipment

- UL 2231

  Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits

- UL 2594

  Electric Vehicle Supply Equipment

- UL 2251

  Plugs, Receptacles and Couplers for Electric Vehicles

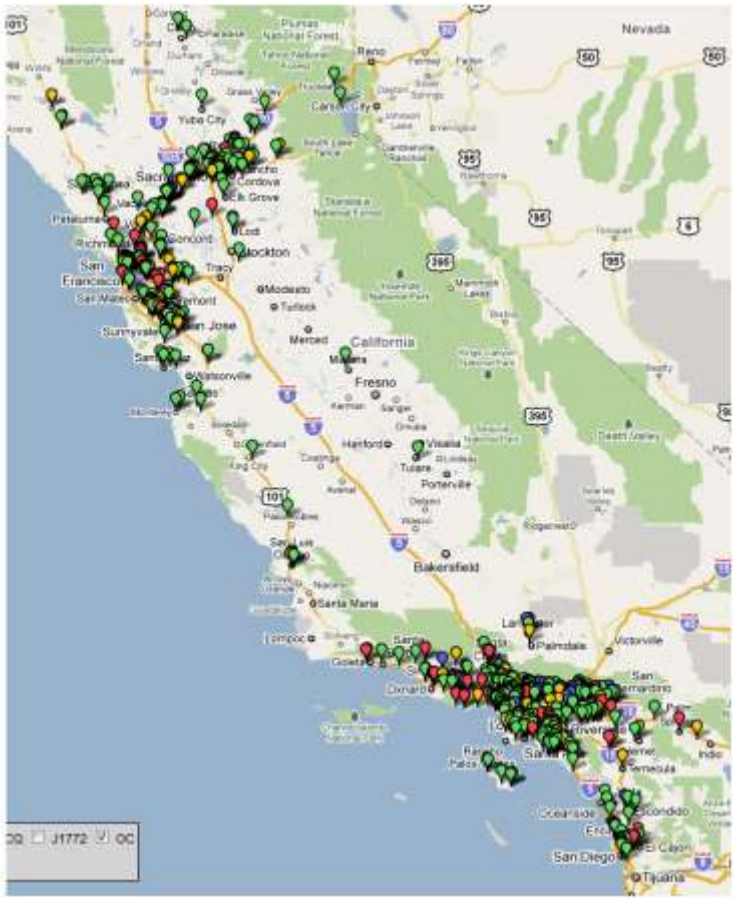
NEC 625

- Defines Electrical Installation Requirements
- Permitting
- Inspections
  - Requires listed EVSE
- Other Requirements:
  - Installation Height
  - Hardwired installation
  - Location
- Power Availability
  - 16 to 100 amps
  - No demand factor

ClipperCreek CS

Public Infrastructure

- Over 1,200 EVSEs now exist in CA – Most are obsolete . . .
  - ClipperCreek now upgrading
  - Charging will remain *FREE*
- Free location mapping by Google & NREL
- Tens of thousands projected for the next few years
- Power Utilities say “Keep it simple” . . .
- “Smart Grid” is the Future for Network & Control



www.EVChargerNews.com

“Smart Grid” Integration

- Integration Application
  - Seamless integration to existing Smart Grid providers
  - Local & network wide control
  - Partnered with Silver Spring Networks
- Demand Side Metering(DSM) devices
  - Similar to AC & water heater systems
  - On /off control and configuration
  - User control & scheduling

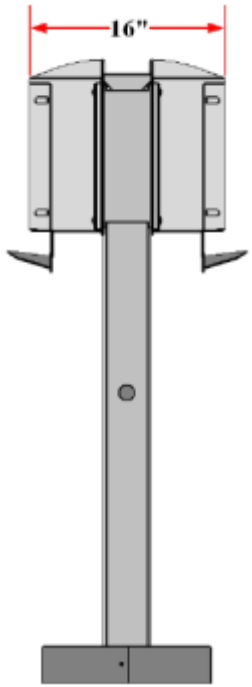
Installation

CS Installation

- 4 mounting points
- Conduit
- L1, L2 and Ground
- Simple Test

- LEED Certification credit
- Integrate into TOU meter
- Existing Access Control
- Existing energy control

- Pedestal Mounting
  - 4 anchor bolts
  - Aesthetic cover
  - Sturdy installation suitable



ClipperCreek Technology

Software - based Digital Electrical Safety Systems

- UL 1998, UL 2202, and UL 2231

  - 20 mA CCID (Charge Circuit Interrupting Device
  - Voltage independent
  - Filtered signal allows for a reliable system, excellent immunity to nuisance tripping
  - Self-test, automatically performs periodic self-tests, no user testing required
  - Auto-reclosure

Current Products

- CS – series infrastructure product line
  - Available from 30 to 75 amps cont.
  - External control, timer
  - Remote fault indicator
  - Auto-Reclosure and Restart
  - NEMA 4 enclosure
  - Plug and charge
  - Cold-load pickup
- PCS-15 Low-cost portable EVSE for OEM vehicle delivery
  - Auto-Reclosure and Restart
  - NEMA 4 enclosure
  - Plug and Charge
- TS-90
  - Designed & produced exclusively for Tesla Roadster

Coming ClipperCreek Products

LCS-25 … Low cost Level 2 EVSE for PHEV and lower power requirement EV installations

- 20 Amps cont., 208 to 240 VAC
- Full-rate charge
- Great for customers with limited capacity
- Auto-Reclosure and Restart
- NEMA 4 enclosure
- Plug and Charge
- UL listed available: Jan. 2011

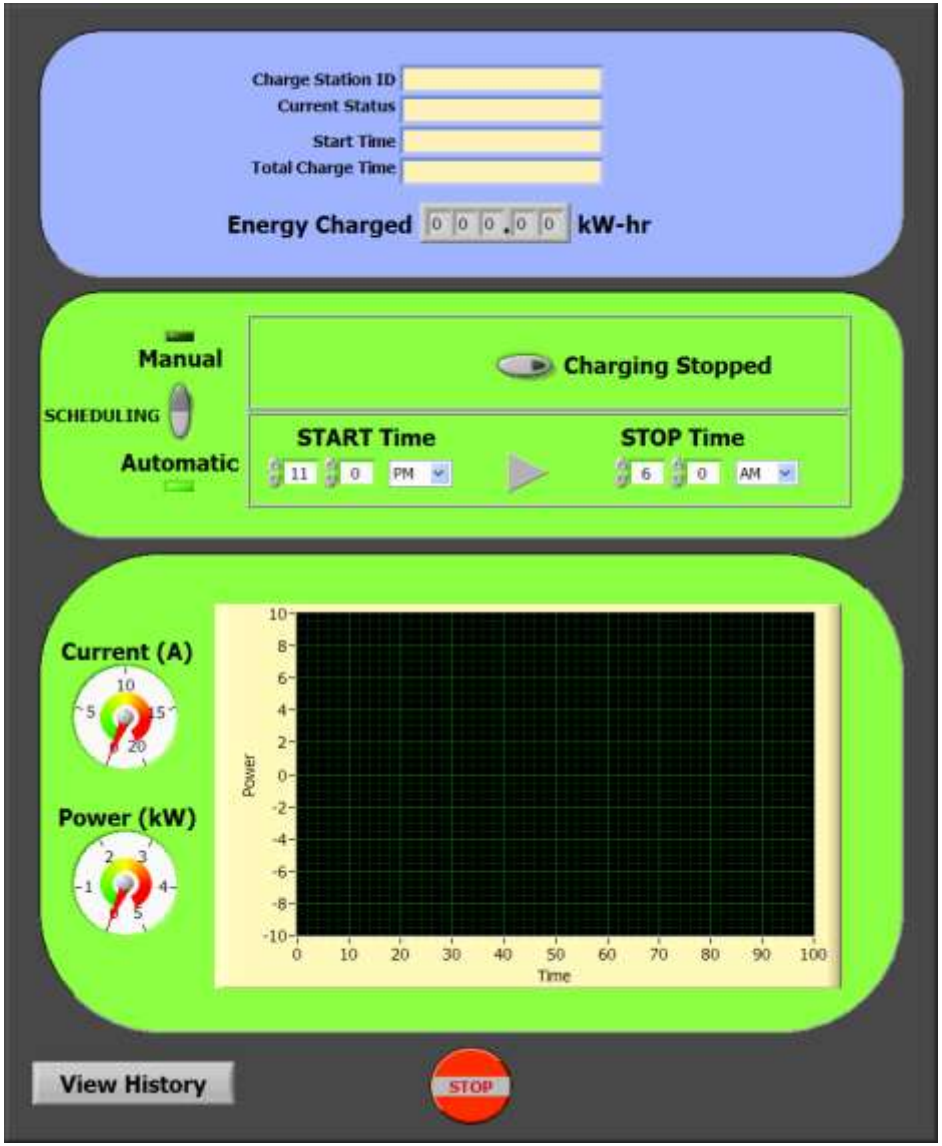
ClipperCreek
LCS-25

Energy Data Monitoring

Individual EVSE event monitoring

- Charge scheduling/TOU control
- Customized usage data reports
- Data available on multiple platforms
  - Zigbee / Wi-Fi connection
  - Local desktop data
  - LAN
  - Web / Cloud

- Available: January 2011
- Retrofit-able for CS-Series



ClipperCreek Advantages

- Immediate shipping of UL listed Products
- All EV's confirmed to work with ClipperCreek EVSE Products
- Compatibility-tested with BMW, Chrysler, CODA, Fisker, Ford, GM, Mercedes, Mitsubishi, Navistar, Nissan, Smart, Smith, Tesla, Toyota, Wheego, etc . . .
- National Installation & Site Engineering resources
- Proven performance & reliability over 10 yrs. commercial / private use
- Best Value – Outstanding dependability
- Easily integrated to existing Access Control, and Energy Management Systems

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Thank You!

. . . remember the 50% Fed Tax Credit for EVSE & Installation *expires* Dec. 31st, 2010

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